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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,736	05/02/2006	Li-Qun Xu	36-1987	5174
23117 7590 07/29/2009 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
CONWAY, THOMAS A				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/577,736

Applicant(s)

XU ET AL.

Examiner

THOMAS A. CONWAY

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's response to the last office action filed 5/11/2009 have been entered and made record of.
2. Applicant's amendments of claims 1-6, filed on 5/11/2009 have been entered and made record of. Claim 4 has been cancelled.
3. In view of the Applicant amendments, the objections of claims 1, 4 and 5 with regards to informalities are expressly withdrawn.
4. In view of the Applicant amendments, the objections to the specification with regards to informalities are expressly withdrawn.
5. In view of the Applicant amendments, the rejection of claim 3 under 35 U.S.C. 101 is expressly withdrawn.

Response to Arguments

1. Applicant's arguments filed 5/11/2009 have been fully considered but they are not persuasive.
2. Applicant points out that the corresponding European application has been granted and includes reasoning given by the EPO Examiner as to the allowability of the claimed invention.
3. Specifically, the Applicant argues that Porikli does not disclose the claim limitations of claims 1 (c and d) and the associated limitation in claim 5.

4. Applicant also argues that the remaining claims are allowable by virtue of their dependence on claims 1 and 5 as argued by the Applicant.
5. Applicant also argues that the rejection of claims 2 and 6 under 35 USC 103 are improper since the limitations that Porikli does not disclose (as alleged by the Applicant's response (steps c and d of claim 1 and the associated step c of claim 5)) are not provided by Sifakis.

The Examiner would like to respectfully point out to the Applicant that the United States Patent and Trademark Office is not bound by the decision of other patent offices with regards to the allowability of subject matter contained in a foreign application. The cursory reasoning as presented by the EPO Examiner illustrated limitations that the Examiner feels was not properly expressed within the language of the instant application's limitation, for example, "dilated region touches a boundary". The prior art relied upon by the EPO is not identical to the prior art relied upon by Examiner in the current US application prior art rejection.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the reasoning as provided by the Applicant with regards to the allowance issued by the EPO) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

With respect to claims 1 and 5, the limitations of segmenting as foreground surrounding picture elements to those picture elements which are already segmented as foreground; and repeating step c) until picture elements which were not segmented as foreground after step a) would be or are segmented as foreground are both disclosed by Porikli. In Section 4 of Porikli's disclosure, there is disclosed a foreground pixel binary image after shadow removal. There is speckle noise within a foreground image. These pixels, which are the surrounding picture elements to those picture elements which are already segmented as foreground. The application of the filter then erode/dilates these holes within the foreground to become included in the segmented foreground as foreground picture elements. The step is repeated (in a second pass) until the picture elements which were not segmented as foreground after step a) (the speckle noise portion of the image) are segmented as foreground.

The Examiner's reliance on Sifakis therefore does not need to include the limitations of claims 1 and 5 as presented by the Applicant since Porikli already teaches all of the limitations of claims 1 and 5. Therefore, the rejection of claims 2 and 6 are proper.

The arguments as presented by the Applicant are not persuasive and the rejections of claims 1-3 and 5-6 should be sustained. **Claim 4 has been cancelled by claim amendment.**

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. **Claims 1, 3 and 5** are rejected under 35 U.S.C. 102(b) as being anticipated by Porikli et al. (Human Body Tracking by Adaptive Background Models and Mean-Shift Analysis, IEEE International Workshop on Performance Evaluation of Tracking and Surveillance, March 2003 (PETS-ICVS 2003), pages 1-9), hereafter referred to as "Porikli".

Regarding claims 1 and 3-5, Porikli discloses an image processing method for detecting objects within an input image, the image being composed of picture elements, the method comprising the steps of:

a) segmenting picture elements representing a foreground object within the input image from those picture elements forming the image background using a first segmentation technique, wherein the picture elements segmented as

foreground include elements representing a shadow or highlight of the object (Section 3, paragraph 1); and

b) segmenting picture elements which have the characteristics of a shadow or highlight of an object from those picture elements representing the foreground object using at least one other segmentation technique adapted to detect shadows or highlights (Section 3); and

c) segmenting as foreground surrounding picture elements to those picture elements which are already segmented as foreground (Section 4, lines 7-12);

d) repeating (Section 4, lines 12-13) step c) until picture elements which were not segmented as foreground after step a) would be or are segmented as foreground (Section 4, paragraphs 1-3); and then e) detecting as objects groups of adjacent picture elements which have been segmented as foreground (Section 4, paragraph 4).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 2 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over "Porikli", in view of Sifakis et al. (Video Segmentation Using Fast Marching and Region Growing Algorithms, EURASIP Journal on Applied Signal Processing 2002:4, Hindawi Publishing Corporation, pages 379–388), hereafter referred to as "Sifakis".

Regarding claims 2 and 6, while Porikli does disclose all the limitations of claims 1 and 5, upon which claims 2 and 6 are dependent, Porikli fails to disclose the method of validating foreground pixel segmentation by comparison of the picture element with probability models relating to surrounding picture elements, wherein the foreground segmentation is confirmed if at least half of the models indicate that the picture element is foreground.

Sifakis discloses a method of segmenting foreground and background pixels using a seeded region growing algorithm (Section 4.3) which basis its selection of region on probability models of neighboring pixels (S4.3.2, see also, Section 4, paragraph 2). As detailed by Sifakis, background and foreground segmentation takes into account inhomogeneity of regional characteristics, but at their local boundaries (at pixel neighborhood level) homogeneous similarities will allow for their discrimination (Section 4, paragraph 2). Regarding characteristics of neighboring pixels is a well known method of discriminating the probabilistic value of a pixel in question (determining which region it belongs to during segmentation).

While Sifakis doesn't specifically mention that the required validation limit needs to include confirmation from at least half of the models relating to the surrounding pixels to validate the pixel as foreground, the term half is a thresholding value and setting a

threshold value is a well known heuristic method which results in a certain number of acceptable false positive foreground pixels.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to include in the method as outlined by Porikli, the capability to validate foreground pixel segmentation by comparison of the picture element with probability models relating to surrounding picture elements, wherein the foreground segmentation is confirmed if at least half of the models indicate that the picture element is foreground, for the purpose of discriminating the foreground from the background.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS A. CONWAY whose telephone number is (571)270-5851. The examiner can normally be reached on Monday through Friday 8AM - 5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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